A TRIASSIC ODONATE FROM ARGENTINA

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The fossil insect described in this paper was collected in 1958 in the precordilleran region of Mendoza in Argentina by the joint expedition of the Museum of Comparative Zoology and the Museo Argentino de Ciencias Naturales of Buenos Aires. The specimen was turned over to me for study by a member of the expedition, Professor Bryan Patterson.

The rock containing the insect is a nearly white shale, with definite bedding and numerous plant fragments. The insect consists of the distal part of a wing, very clearly preserved. About 6 cm. away from this wing there is another specimen, consisting of a small, distal fragment of a wing. The larger specimen is clearly odonate but certain structural details eliminate it from all described families of the order; because of our lack of knowledge of the proximal part of the wing, including the arculus region, I am placing this species in *Incertae Sedis*, in preference to establishing a new family on so few details. The smaller wing fragment can be interpreted best by comparison with the larger specimen, as will be noted below.

Order Odonata
Family: Incertae Sedis
Genus *Triassothemis*, new genus

Pterostigma well formed, elongate; nodus incomplete, without a costal indentation at the junction of the subcosta; nodus remote from the base of the wing: about 6 postnodals between nodus and pterostigma. The genus appears to be related to the suborder Archizygoptera, which has been found in the Triassic of Australia and Jurassic of Europe and Asia (Turkestan).

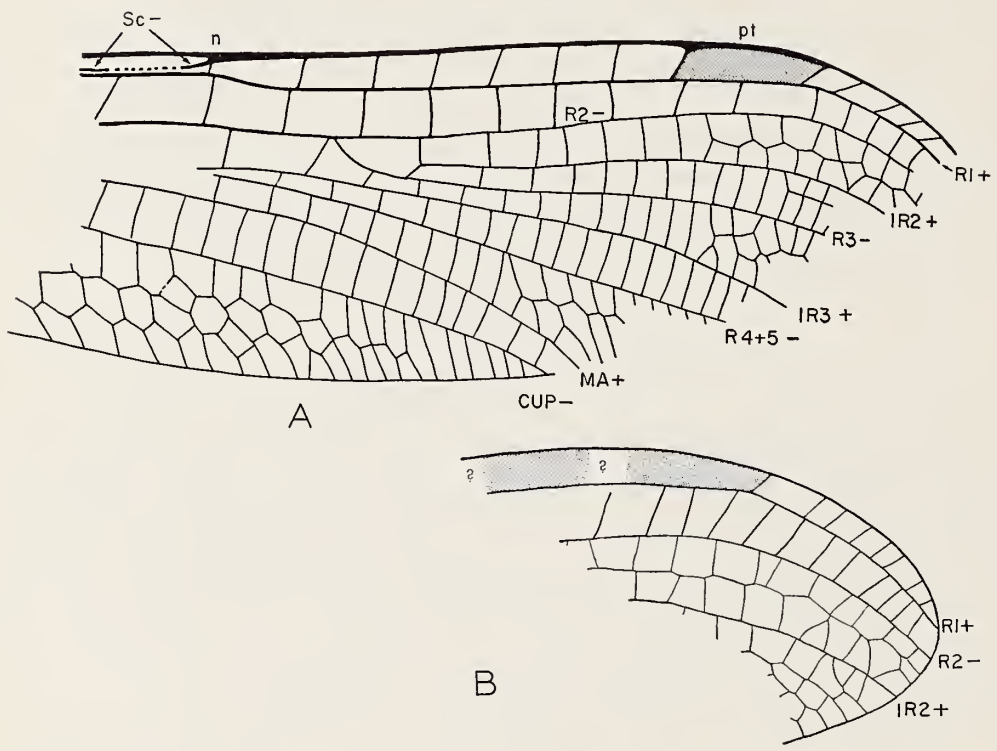
Type species: *Triassothemis mendozensis*, new species

Triassothemis mendozensis, n. sp.
Text figure 1 A, plate 9.

Wing: length (as preserved), 25 mm.; width, 8.5 mm. Pterostigma about four times as long as wide, distinctly pigmented; costal border along the pterostigma somewhat thickened. Nodus incipient; subcosta distinctly thickened as it meets the costa; a short cross-vein between the end of the subcosta and R1, this cross-vein being almost aligned with the cross-vein below it (extending from R1 to R2). R3 separating from R2 at a point not much distal of the nodus; R2 and

R3 widely divergent distally, with four rows of cells between them. The origin of R4+5 from R2+3 is not shown in the specimen but it is clearly proximal of the level of the nodus. MA and R4+5 are markedly divergent distally. IA is not recognizable in the part of the wing that is preserved. Cross-veins are numerous and are distributed as shown in figure 1A.

Holotype: No.18040, in Museo Argentino de Ciencias Naturales, Buenos Aires; collected in the Estratos de Potrerillos, near Agua de las Avispas, along the south slope of Cerro Cacheuta, Argentina. The formation is of Triassic age (see Romer, 1960, for additional geological data). The preserved portion of the wing is very clear (see plate 9) and the venational convexities and concavities are distinct.

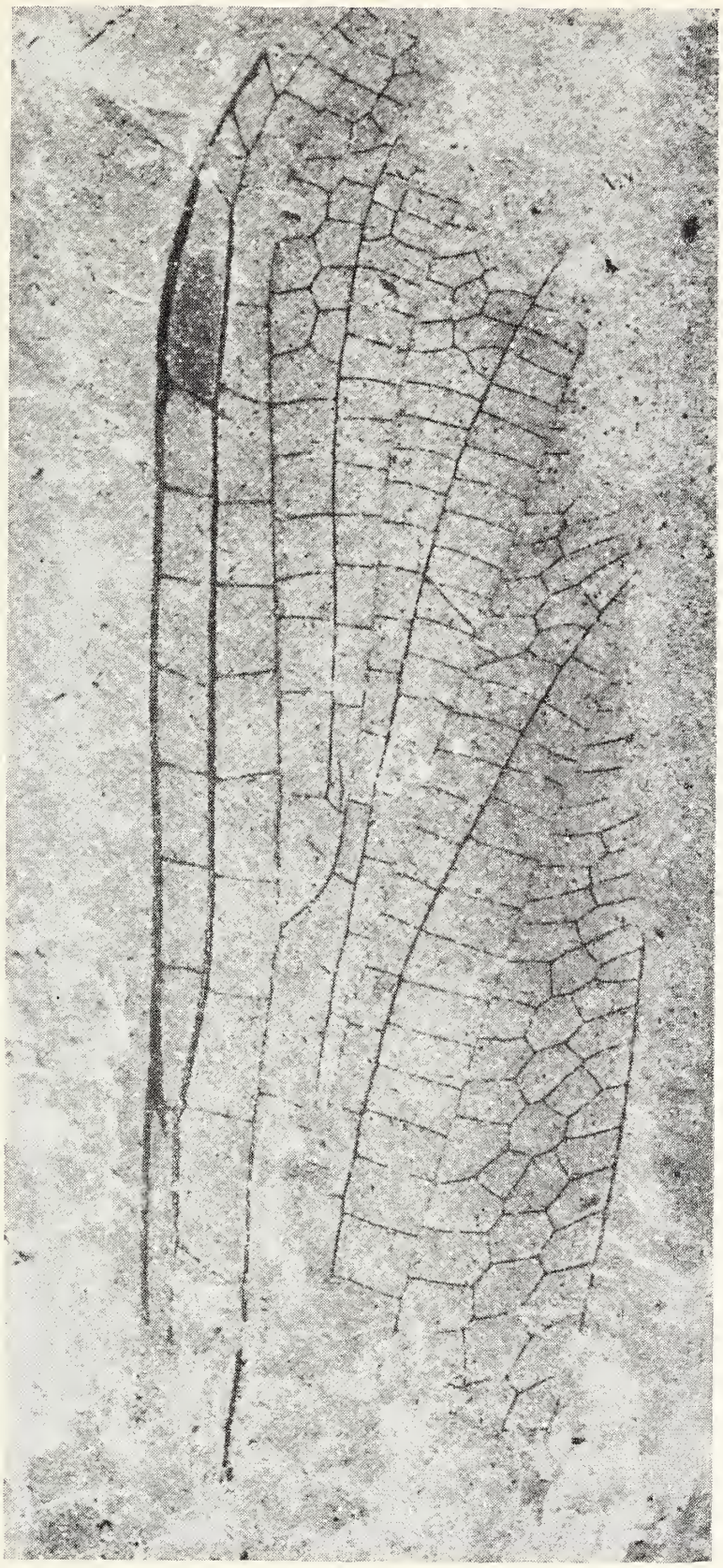


Text-figure 1A. Drawing of *Triassothemis mendozensis,* n. sp., from the Triassic of Argentina (holotype).

Text-figure 1B. Drawing of wing fragment associated with above specimen.

Sc, subcosta; n, nodus; R1, radius; IR2, R2, R3, IR3, R4+5, branches of radial sector; MA, anterior media; CuP, posterior cubitus; —, concave veins; +, convex veins; pt, pterostigma.

The most striking feature of this wing is the nature and location of the nodus. In its form, the nodus is like that of the Archizygoptera



Photograph of holotype of *Triassothemis mendozensis*, n. sp. ×5

but its position is very different. In the Archizygoptera the nodus is very remote from the pterostigma and close to the base of the wing, the subcosta being very short. In *Triassothemis,* the nodus is close to the pterostigma and probably at about the middle of the complete wing. The nodal area is so clearly preserved in the specimen of *Triassothemis* that there can be no doubt about its structure; although the subcosta has been broken away just before its termination, it is present on each side of this missing section. The distal location of the nodus apparently eliminates *Triassothemis* from the Archizygoptera, as the suborder is presently understood. Another peculiarity of the wing of *Triassothemis* is the widening of the area between R1 and the costal margin of the wing, just beyond the nodus. That this is not a distortion is shown by the normal location and distribution of the cross-veins and the other veins in the anterior part of the wing. The pterostigma is like that of the Archizygoptera and the several branches of the radial sector have the divergent arrangements characteristic of that suborder, although the divergences are not quite so marked. The absence of a distinct anal vein (at least in the part of the wing which is preserved) is also suggestive of the Archizygoptera. In most respects, therefore, *Triassothemis* possesses many of the characteristics which we find in the wings of the Archizygoptera but the location of the nodus is very different from that of all of the genera of this suborder so far known.

The small apical fragment of a wing, which is located on the same piece of the rock as *Triassothemis,* resembles the latter in so far as the known parts of the venation are concerned (Figure 1B). R1, R2, IR2 are arranged about as in *mendozensis* but there is a clear indication that the next vein, R3, would be somewhat more remote from IR2 than it is in the specimen of *mendozensis.* The pterostigma is like that of *mendozensis* so far as its distal part is concerned, but it appears to extend proximally the full length of the preserved part of the wing, as shown in figure 1B. It seems very likely that this small wing fragment represents an odonate closely related to *Triassothemis mendozensis;* in fact, since we do not know anything about the differences between the fore and hind wings of the Archizygoptera, it is possible that the fragment is part of another wing of the type of *mendozensis.*

The discovery of this piece of Triassic rock containing two fossil insects, even though they are in fragmentary condition, points up the possible significance of Triassic strata in the Mendoza region of Argentina as a source of extensive collections of insects. Wieland

1925, 1926) has described two other Triassic insects collected in a Triassic deposit very near Cerro Cacheuta, one of these being a homopteron *(Tipuloidea rhaetica)* and the other a possible trichopteron *(Necrotaulius* (?) *affinis)*. Both of the specimens on which these species were based are preserved on one piece of rock. In addition, Kurtz in his atlas of fossil plants from Argentina (1921) includes three sketches of insects which were found in the Triassic beds of the Mendoza area; these are stated in the caption of his plate 7 to be hymenopterous wings, although they are most certainly not representatives of that order. Also, one of the Triassic specimens which Kurtz identified as a plant *(Beira argentina)* and figured on his plate 22, fig. 336, is actually part of a wing of an insect, subsequently designated by Cockerell (in Wieland, 1926) as *Elcana* (?) *argentina*. It seems clear from this casual collecting of insects in the Triassic deposits of the Mendoza area that further exploration of these strata for insects is very desirable.

Literature Cited

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